Dixie 1970

BIOLOGICAL EVALUATION OF THE MOUNTAIN PINE BEETLE IN PONDEROSA PINE IN BRYCE CANYON NATIONAL PARK AND DIXIE NATIONAL FOREST, 1970

This is the fifth consecutive year of a recurring infestation of the mountain pine beetle, Dendroctonus ponderosae Hopk. in ponderosa pine in Bryce Canyon National Park and in the Powell Division of the Dixie National Forest. Remnants of past control work (Figure 1) attest to past beetle activity in both the Park and Forest. The last outbreak persisted from 1951 to 1961 during which more than 45,000 individual trees were felled and treated.

An extensive ground survey conducted over most of the infestation in October of 1969 showed the level of brood trees to be around one-half tree per acre. This relatively light and widely scattered infestation pattern was confirmed during the 1970 aerial survey when these trees were detected and mapped (microfilm copies of the maps have already been mailed to the Park and Forest). The location of the infestation remains essentially the same as last year. In the Park, most of the attacks are concentrated in the Shaker Spring, Whiteman Spring area along both sides of the highway (Figure 2). On the Forest, heaviest tree killing occurs on Whiteman bench between the Park boundary, Long Hollow, and the East Fork of the Sevier River. Widely scattered mortality still persists on the west side of the East Fork between Skunk and Blue Fly Creeks.

On October 13 and 14, 1970, Entomologist William Klein examined several of the most heavily infested areas to determine the status of the infestation. Four transects were run between Shaker Spring and Whiteman Spring (see appended map). On each transect, both new (1970) and old (1969) attacked trees were detected, measured, and recorded. In addition, newly established broods were examined to determine their life stage and general condition. A summary of this survey follows:

Area	Trees Attacked In 1970 (Number)	Trees Attacked In 1969 (Number)	Attack Ratio	Average d.b.h. 1970 (Inches)	Average d.b.h. 1969 (Inches)	Infestation Intensity 1/	Trend
1	0	10			13.6	L	Decreasing
2	6	41	0.2:1	22.0	14.4	M	Decreasing
3	18	14	1.3:1	17.7	14.6	M	Static
4	0	8			17.8	L	Decreasing

L=Light, M=Moderate, H=Heavy

The results of this survey show that in the areas examined, there were fewer trees attacked this year than last. On two of the transects (1 and 4) no new attacks were found. There may be a certain amount of error involved here, however, for (1) tree numbers were relatively few and (2) new attacks were more difficult to detect than old attacks because some did not exhibit normal attack signs such as boring dust and pitch exudation. Dead trees occurred individually and in groups. The small diameter trees consistently occurred in groups.

Brood development was barely advanced. Egg laying adults and freshly deposited eggs were the only stages observed. No parasites or predators were observed. A few of the larger trees (1969 attacks) contained brood of the western pine beetle, Dendroctonus brevicomis Lec. Brood stage was largely pupae and young adults (tenerals). They will overwinter, emerge in early summer, and attack trees already infested with the mountain pine beetle.

Typical of past conditions in Bryce Canyon Park, many of the old brood trees (1969 attacks) had not completely faded. In fact, the crowns of some trees were still green. These trees, then,will not fade until 1971.

In the Park, tree killing will continue in 1971 but slightly under that experienced in 1970. Most of the mortality will be concentrated in the Shaker Spring - Whiteman Spring area and visible from the main highway. Group killing will decrease somewhat but mortality will be concentrated in the larger trees. Elsewhere, on Whiteman Bench and north of Shaker Spring, widely scattered attacks will continue. On the Forest, tree killing will maintain the same level as in 1970.

In the Park, control is not recommended. On the Forest, in the East Fork drainage, past long-term control recommendations still apply. Short-term tree protection is impractical unless stands are to be harvested in the immediate future and the resulting benefits more than offset control costs. Long-term protection from bark beetle losses can only be obtained through the orderly conversion of these high risk stands to a less susceptible state.

Archive 1978

Figure 1. Remnants of past control efforts in Bryce Canyon National Park. This work, south of Whiteman Spring, was done sometime during the 1950's.

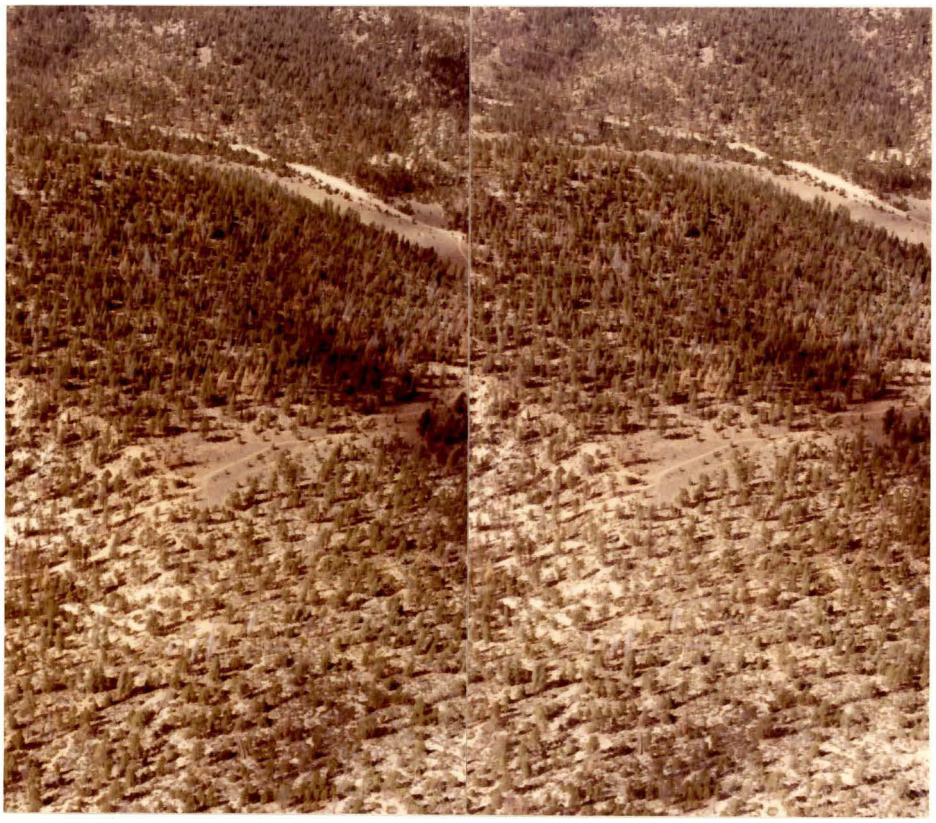
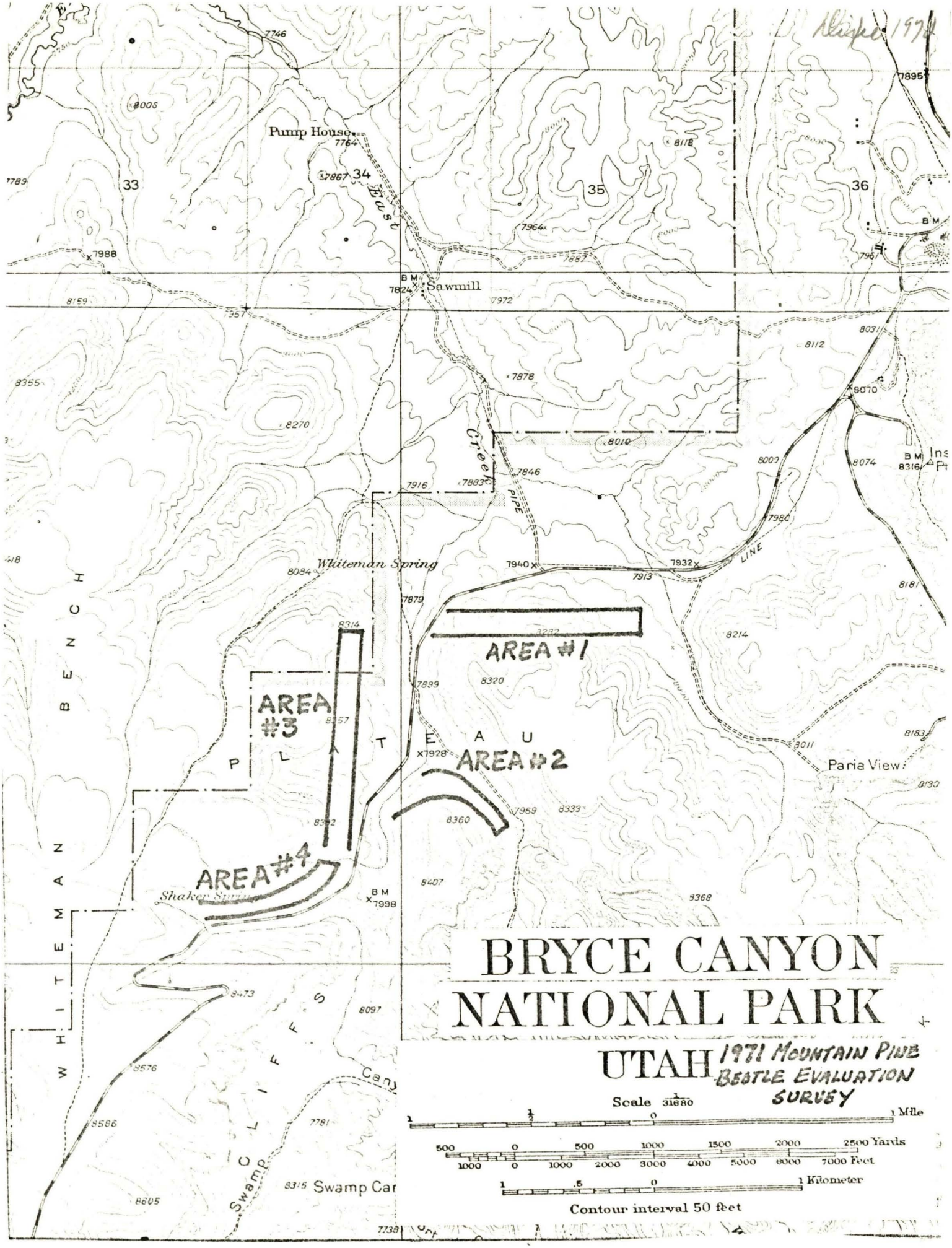


Figure 2. Aerial stereogram showing infestation northeast of Shaker Spring. Highway near top of photo.


Pump House
Sawmill
East
Creek
PIPE
LINE
Whiteman Spring
AREA #1
AREA #2
AREA #3
AREA #4
Shaker Spring
Paria View
Swamp Canyon
WHITEMAN BENCH
PLATEAU
BRYCE CANYON
NATIONAL PARK
UTAH
1971 MOUNTAIN PINE BEETLE EVALUATION SURVEY
Scale 1/31680
1 Mile
2500 Yards
7000 Feet
1 Kilometer
Contour interval 50 feet